Asian Clam Monitoring Program
USEPA/NHDES Partnership
Summer/Fall 2013

Project: Asian Clam Monitoring Program

Justification: Asian clam (*Corbicula fluminea*) has been identified in the Merrimack River from Hooksett through at least Merrimack, in Cobbetts Pond in Windham, and in Long Pond in Pelham, New Hampshire.

There has been no field work on this invasive freshwater clam species performed in New Hampshire to date, and additional information is needed on the density of the clams present in the three documented locations, both to understand their populations in New Hampshire's waters, and gauge potential risk to water quality, native mussels and other benthic species.

Due to the low winter temperatures and ice formation in this part of the New England Region, it is believed that the Asian clam is at the northern extent of its range, yet populations have developed and over-wintered.

Study Sites:

Site	# Transects	Total Number of Sites	Tentative Sample Date
Merrimack River North (Hooksett/Amoskeag/Garvins Pools)	7	21	July 22
Merrimack River South (Merrimack)	2	8	July 23
Cobbetts Pond, Windham (344 acre lake)	10	30	July 24
Long Pond, Pelham (120 acre lake)	7	21	July 25

Objective: The purpose of this study is to compare the population densities in the two lake systems with the populations above ,within and a distance downstream of a thermal plume on the Merrimack River, which could be potentially providing ideal habitat for higher reproduction rates of the clam.

The goal of the study would be twofold: 1) Determine the densities and distributions of Asian clam within each of the three listed systems, and 2) Determine if there is a density difference in thermally influenced reaches of the Merrimack River as compared with ambient conditions in the two natural lake systems and downstream reaches of the Merrimack River where there are no human-induced thermal influences. The project would involve setting up a collaborative between EPA and DES to develop a study, collect data and analyze

the data to determine if there are any differences in clam densities between and within the systems. The project would involve some field work (diving, ponar grabs, video surveys) and laboratory work (sorting sediments, identifying and enumerating clams and other species in the samples) and data analysis.

Timing: July 22-26, 2013

Field procedures:

Each site is sampled for the full slate of parameters in May/June 2013, then a follow up field sampling will be performed for a short list of parameters in September/October 2013.

Parameter	**Method**	**Location/Depth**	**Field/Laboratory**	**July/September**
Water Depth	Sonar or sounding	Water column at half meter intervals	Field	Both
Secchi Depth	Std Method	Mid point of transect	Field	Both
Temp/DO Profile	Temp/DO Meter or Multi-probe	Mid point of transect, water column at half meter intervals	Field	Both
pH	Multi-probe in field or sample collection then bench top meter in lab	Mid point of transect, water column at half meter intervals	NHDES JCLC	Both
pH (sediment)	?	Sediment surface		Both
Turbidity	Multi-probe in field	Mid point of transect, water column at half meter intervals	NHDES JCLC	Both
Conductivity	Multi-probe in field or sample collection then bench top meter in lab	Mid point of transect, water column at half meter intervals	NHDES JCLC	Both
Chloride	Field collection and bench top meter	Mid point of transect, water column at half meter intervals	NHDES JCLC	Both
Calcium	Sample collection and laboratory analysis	Mid point of each transect	EPA	Both
Sediment Fractions	Field sample collection with dredge	Each sample point	Laboratory drying and seiving	July
Asian clam count and shell length and native mussel ID	Field sediment collection and seiving/counting	Each sample point	Field and EPA	Both
Long-Term Temperature Monitoring	Thermisters	Hooksett Pool	Field	Duration
Veliger monitoring	Horizontal plankton net tow	One transect to next transect tow in each waterbody	Field/EPA flowcam or flow-through microscopy enumerator/ID	Both
Diver video	TBD (EPA)	Higher density	EPA/TBD	Once (timeframe

transects		transect based on preliminary field surveys		TBD)

General Task Break Down

Boat One (2 staff)	Boat Two (2 staff)
Water column sonde profiles/data recording	Sediment collection for sediment fractions
Chemistry sample collection	Sediment Collection for Asian clam/native mussel counts
Secchi depth	
Veliger tows	